Ontario

Ministry of
Transportation and
Communications

MI-82

REPORT FOR
AGGREGATE REFERENCE SAMPLES
1.84 AND 2.84

MATERIALS INFORMATION

ENGINEERING MATERIALS OFFICE

Soils and Aggregates Section
Engineering Materials Office
1201 Wilson Avenue
Central Building, Room 311
Downsview, Ontario M3M 1J8
Telephone: (416) 248-3286

85 05 22

TO: Participants in Correlation Program

SUBJECT: Aggregate Reference Sample #'s 1.84 and 2.84

Gentlemen:

Enclosed is your copy of the Final Report on the test results of Aggregate Reference Sample #'s 1.84 and 2.84.

These data include a table of results for your laboratory and a set of scatter diagrams. Your laboratory number appears at the top of the table of results.

Yours truly,

Ian G. Bullen.

I.G. Bullen,
Laboratory Operations
Supervisor (Acting).

IGB/jlo
Attachment

NOTES ON DATA PRESENTATION

1. TABLE OF TEST RESULTS

a. Column 1 - This lists the test number as designated in the M.T.C. Laboratory Testing Manual and the individual test segments.

b. Columns 2 & 3 - List the individual data for the pair of samples. NT means not tested, and * means measurement rejected.

c. Columns 4 & 5 - List the mean test data for the pair of samples for all laboratories performing the test.

d. Columns 6 & 7 - List the "Standardized Deviate" for each test result. This is a measure of how close an actual test result is to the mean for all similar test results (for one sample). It is obtained by subtracting the actual test result (X_1) from the mean ($\overline{X}$), and dividing by the standard deviation(S). A negative sign means that the test result is smaller than the mean, and no sign means the test result is equal to or larger than the mean.

e. Columns 8 & 9 - List the "Laboratory Ratings", which, in effect, are similar to the "Standardized Deviate", but in a simpler numerical form.

The ratings are as follows:

5 - test result within $\frac{1}{2}$ standard deviation from $\overline{X}$
4 - " 1 "
3 - " $1\frac{1}{2}$ "
2 - " 2 "
1 - " $2\frac{1}{2}$ "
0 - test result has been rejected as an outlier.

As before, a negative sign indicates a result that is smaller than the mean.

.... 2

2. SCATTER DIAGRAMS

The points on these diagrams are designated by letters - each letter representing a laboratory. The points are located by plotting the value obtained for the first (odd number) sample on the horizontal axis against the value obtained for the second (even numbered) sample on the vertical axis. If the results from two or more laboratories happen to intersect at the same point, the symbols & or ? are used. An * represents a point which is off the chosen scale. The scales are chosen, wherever possible, to give the most informative display of the plotted points. If a point is off the scale, it does not necessarily mean that it is outside the limits noted above.

The horizontal and vertical dashed lines forming the cross on the plot represent the median values for the two samples.

The data below the scatter diagram consists of the mean, median, standard deviation, and standard error of the mean for both samples.

NOTE:

As data is obtained for additional pairs of samples, a graphical construction will be made of the laboratory ratings. This will give, at a glance, a picture of the laboratory performance, and will indicate error trends. These will be included with future reports. For further details on the correlation programs, please refer to the following reports:

EM-30; "Interlaboratory Study of the Precision of Some Aggregate Tests - Interim Report", by C.A. Rogers & Lise Manchester; May, 1979.

EM-33; "The Development of an Interlaboratory Testing Program for Construction Aggregates", by Lise Manchester; December, 1979.

EM-47; "Interlaboratory Reference Sample Programs for Aggregate, Asphalt, Concrete and Soil Tests", by B. Chojnacki, C. Rogers, and J.I. McDougall; May, 1981.

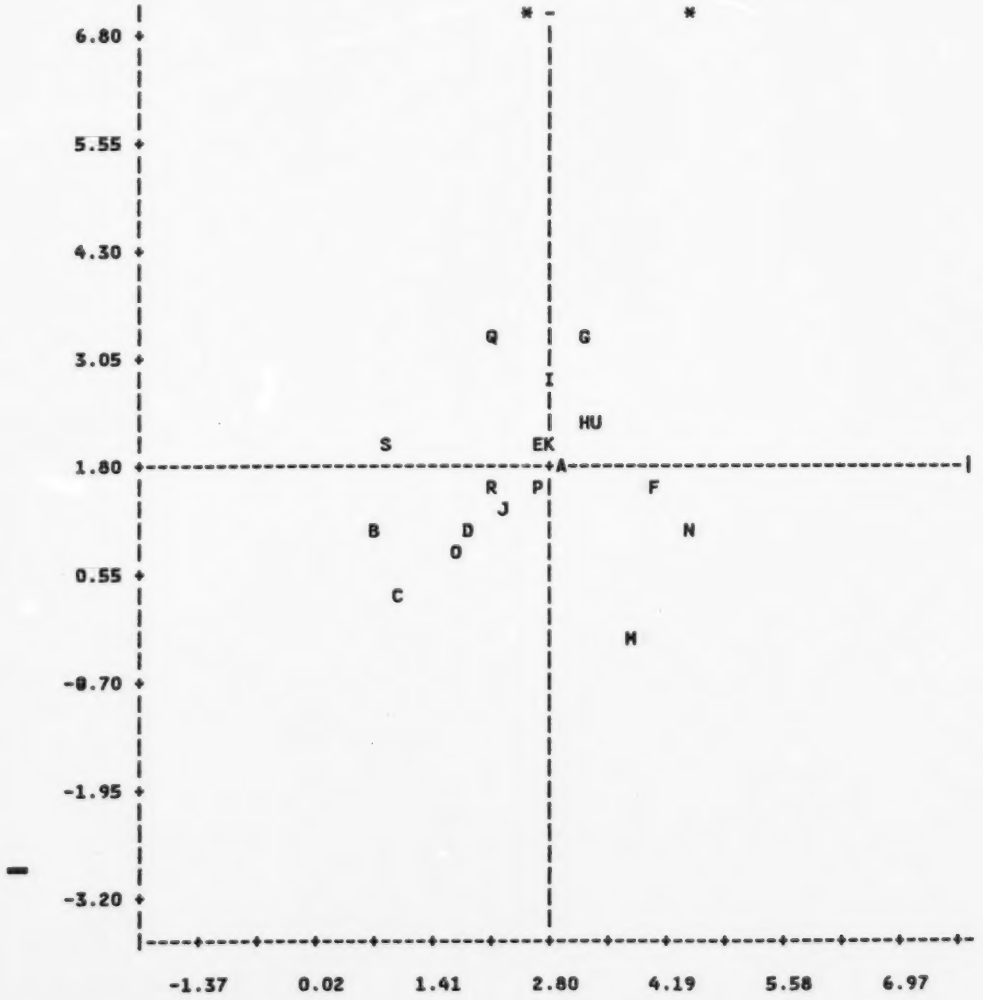
TEST 2: PERCENT RETAINED ON 19 MM SIEVE (COARSE AGGREGATE)

SCATTER PLOT ANALYSIS

SCALE: 0.556 UNITS=1 CM

HORIZONTAL AXIS: MATERIAL 1

VERTICAL AXIS: MATERIAL 2



LEGEND

LAB. NO. 1 = A
LAB. NO. 2 = B
LAB. NO. 4 = C
LAB. NO. 5 = D
LAB. NO. 6 = E
LAB. NO. 12 = F
LAB. NO. 13 = G
LAB. NO. 14 = H
LAB. NO. 23 = I
LAB. NO. 27 = J
LAB. NO. 38 = K
LAB. NO. 50 = L
LAB. NO. 53 = M
LAB. NO. 56 = N
LAB. NO. 58 = O
LAB. NO. 60 = P
LAB. NO. 62 = Q
LAB. NO. 64 = R
LAB. NO. 66 = S
LAB. NO. 67 = T
LAB. NO. 69 = U

	MATERIAL 1	MATERIAL 2
MEAN	2.790	2.210
MEDIAN	2.800	1.800

NO OF POINTS IN EACH QUADRANT

NE = 4
SE = 3

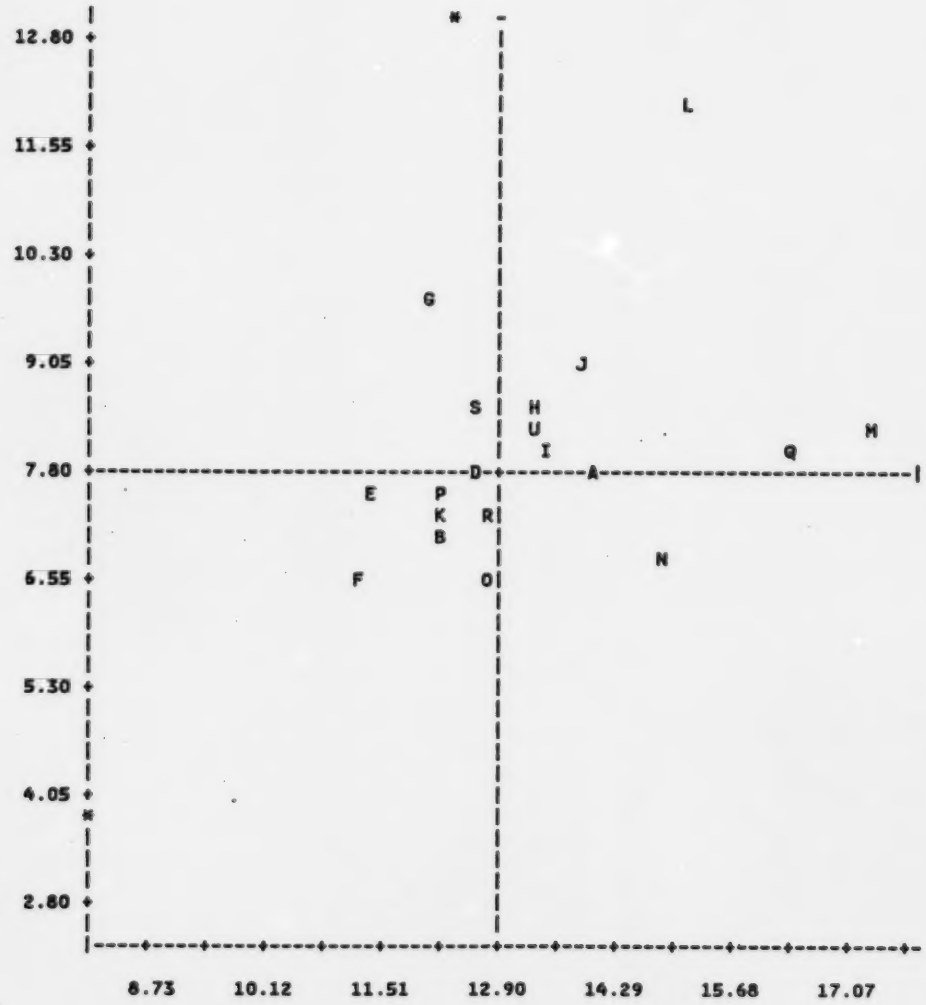
TEST 3: PERCENT RETAINED ON 16 MM SIEVE (COARSE AGGREGATE)

SCATTER PLOT ANALYSIS

SCALE: 0.556 UNITS=1 CM

HORIZONTAL AXIS: MATERIAL 1

VERTICAL AXIS: MATERIAL 2



LEGEND

LAB. NO. 1 = A
LAB. NO. 2 = B
LAB. NO. 4 = C
LAB. NO. 5 = D
LAB. NO. 6 = E
LAB. NO. 12 = F
LAB. NO. 13 = G
LAB. NO. 14 = H
LAB. NO. 23 = I
LAB. NO. 27 = J
LAB. NO. 38 = K
LAB. NO. 50 = L
LAB. NO. 53 = M
LAB. NO. 56 = N
LAB. NO. 58 = O
LAB. NO. 60 = P
LAB. NO. 62 = Q
LAB. NO. 64 = R
LAB. NO. 66 = S
LAB. NO. 67 = T
LAB. NO. 69 = U

	MATERIAL 1	MATERIAL 2
MEAN	13.100	8.210
MEDIAN	12.900	7.800

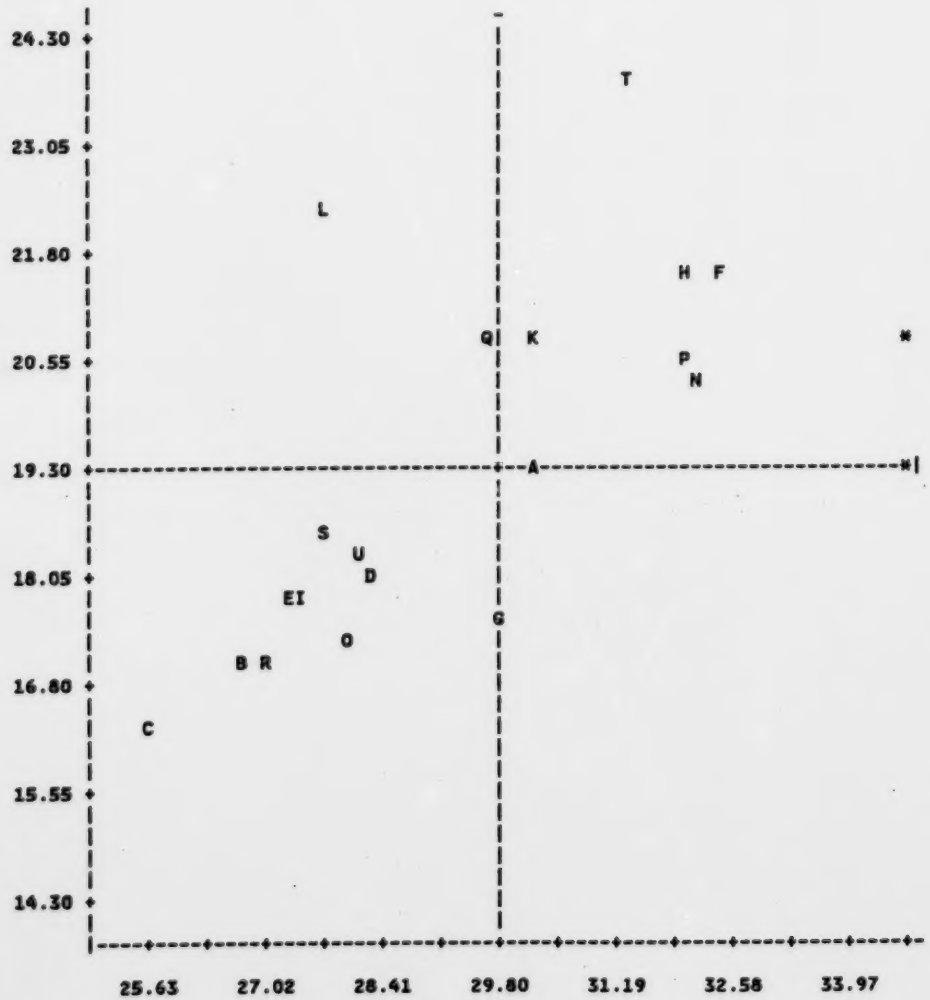
NO OF POINTS IN EACH QUADRANT

NE = 8
SE = 1

TEST 4: PERCENT RETAINED ON 13.2 MM SIEVE (COARSE AGGREGATE)

SCATTER PLOT ANALYSIS — HORIZONTAL AXIS: MATERIAL 1

SCALE: 0.556 UNITS=1 CM — VERTICAL AXIS: MATERIAL 2



LEGEND
======

LAB. NO. 1 = A
LAB. NO. 2 = B
LAB. NO. 4 = C
LAB. NO. 5 = D
LAB. NO. 6 = E
LAB. NO. 12 = F
LAB. NO. 13 = G
LAB. NO. 14 = H
LAB. NO. 23 = I
LAB. NO. 27 = J
LAB. NO. 38 = K
LAB. NO. 50 = L
LAB. NO. 53 = M
LAB. NO. 56 = N
LAB. NO. 58 = O
LAB. NO. 60 = P
LAB. NO. 62 = Q
LAB. NO. 64 = R
LAB. NO. 66 = S
LAB. NO. 67 = T
LAB. NO. 69 = U

	MATERIAL 1	MATERIAL 2
MEAN	29.843	19.376
MEDIAN	29.800	19.300

NO OF POINTS IN EACH QUADRANT

NE = 7
SE = 0

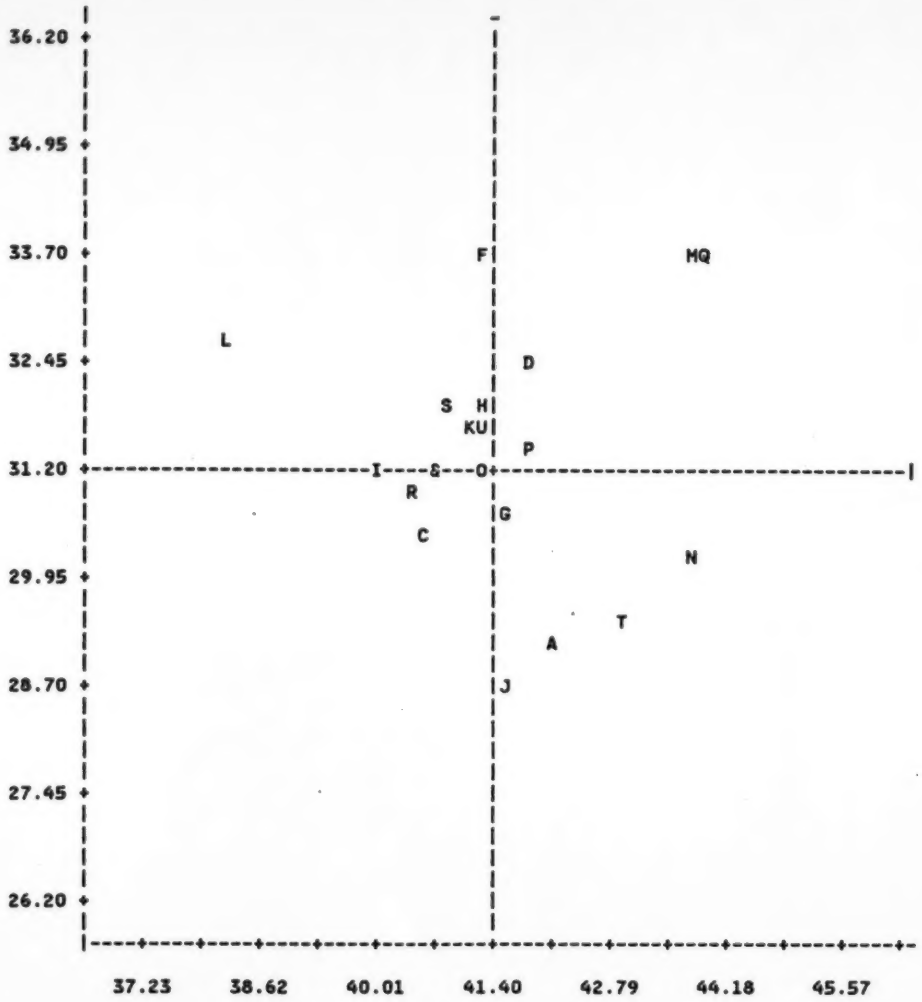
TEST 5: PERCENT RETAINED ON 9.5 MM SIEVE (COARSE AGGREGATE)

SCATTER PLOT ANALYSIS

SCALE: 0.556 UNITS=1 CM

HORIZONTAL AXIS: MATERIAL 1

VERTICAL AXIS: MATERIAL 2



LEGEND

LAB. NO. 1	= A
LAB. NO. 2	= B
LAB. NO. 4	= C
LAB. NO. 5	= D
LAB. NO. 6	= E
LAB. NO. 12	= F
LAB. NO. 13	= G
LAB. NO. 14	= H
LAB. NO. 23	= I
LAB. NO. 27	= J
LAB. NO. 38	= K
LAB. NO. 50	= L
LAB. NO. 53	= M
LAB. NO. 56	= N
LAB. NO. 58	= O
LAB. NO. 60	= P
LAB. NO. 62	= Q
LAB. NO. 64	= R
LAB. NO. 66	= S
LAB. NO. 67	= T
LAB. NO. 69	= U

	MATERIAL 1	MATERIAL 2
MEAN	41.633	31.381
MEDIAN	41.400	31.200

NO OF POINTS IN EACH QUADRANT

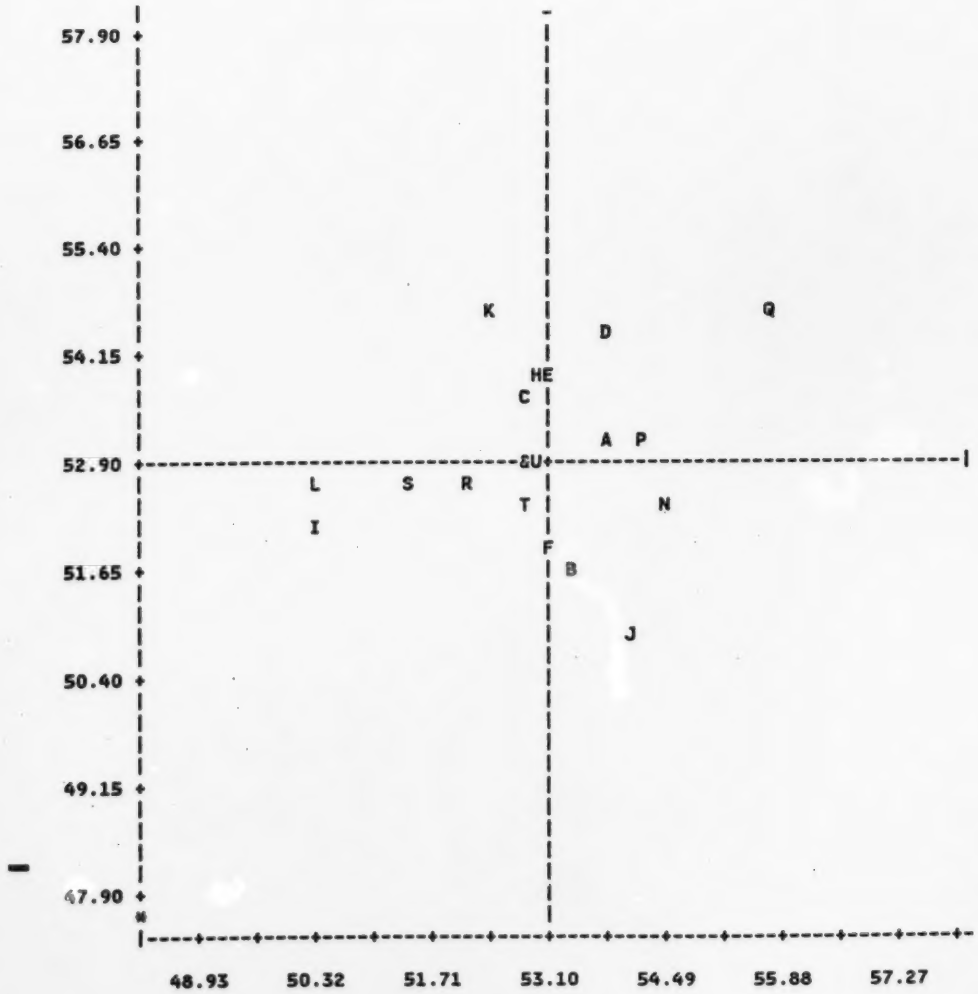
NE = 4

SE = 5

TEST 6: PERCENT RETAINED ON 4.75 MM SIEVE (COARSE AGGREGATE)

SCATTER PLOT ANALYSIS — HORIZONTAL AXIS: MATERIAL 1

SCALE: 0.556 UNITS=1 CM — VERTICAL AXIS: MATERIAL 2



LEGEND
======

LAB. NO. 1 = A
LAB. NO. 2 = B
LAB. NO. 4 = C
LAB. NO. 5 = D
LAB. NO. 6 = E
LAB. NO. 12 = F
LAB. NO. 13 = G
LAB. NO. 14 = H
LAB. NO. 23 = I
LAB. NO. 27 = J
LAB. NO. 38 = K
LAB. NO. 50 = L
LAB. NO. 53 = M
LAB. NO. 56 = N
LAB. NO. 58 = O
LAB. NO. 60 = P
LAB. NO. 62 = Q
LAB. NO. 64 = R
LAB. NO. 66 = S
LAB. NO. 67 = T
LAB. NO. 69 = U

	MATERIAL 1	MATERIAL 2
MEAN	52.843	52.648
MEDIAN	53.100	52.900

NO OF POINTS IN EACH QUADRANT

NE = 4
SE = 3

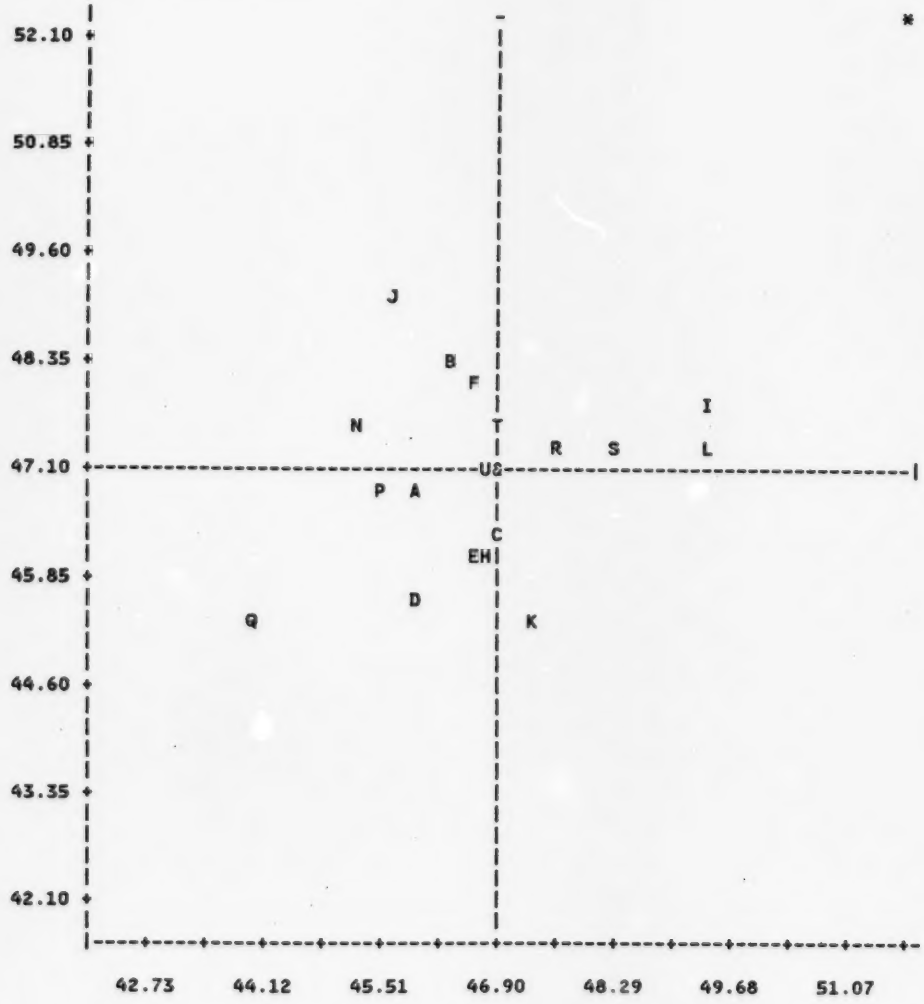
TEST 7: PERCENT PASS ON 4.75 MM SIEVE (COARSE AGGREGATE)

SCATTER PLOT ANALYSIS

SCALE: 0.556 UNITS=1 CM

HORIZONTAL AXIS: MATERIAL 1

VERTICAL AXIS: MATERIAL 2



LEGEND

LAB. NO. 1	= A
LAB. NO. 2	= B
LAB. NO. 4	= C
LAB. NO. 5	= D
LAB. NO. 6	= E
LAB. NO. 12	= F
LAB. NO. 13	= G
LAB. NO. 14	= H
LAB. NO. 23	= I
LAB. NO. 27	= J
LAB. NO. 38	= K
LAB. NO. 50	= L
LAB. NO. 53	= M
LAB. NO. 56	= N
LAB. NO. 58	= O
LAB. NO. 60	= P
LAB. NO. 62	= Q
LAB. NO. 64	= R
LAB. NO. 66	= S
LAB. NO. 67	= T
LAB. NO. 69	= U

	MATERIAL 1	MATERIAL 2
MEAN	47.157	47.352
MEDIAN	46.900	47.100

NO OF POINTS IN EACH QUADRANT

NE = 4
SE = 1

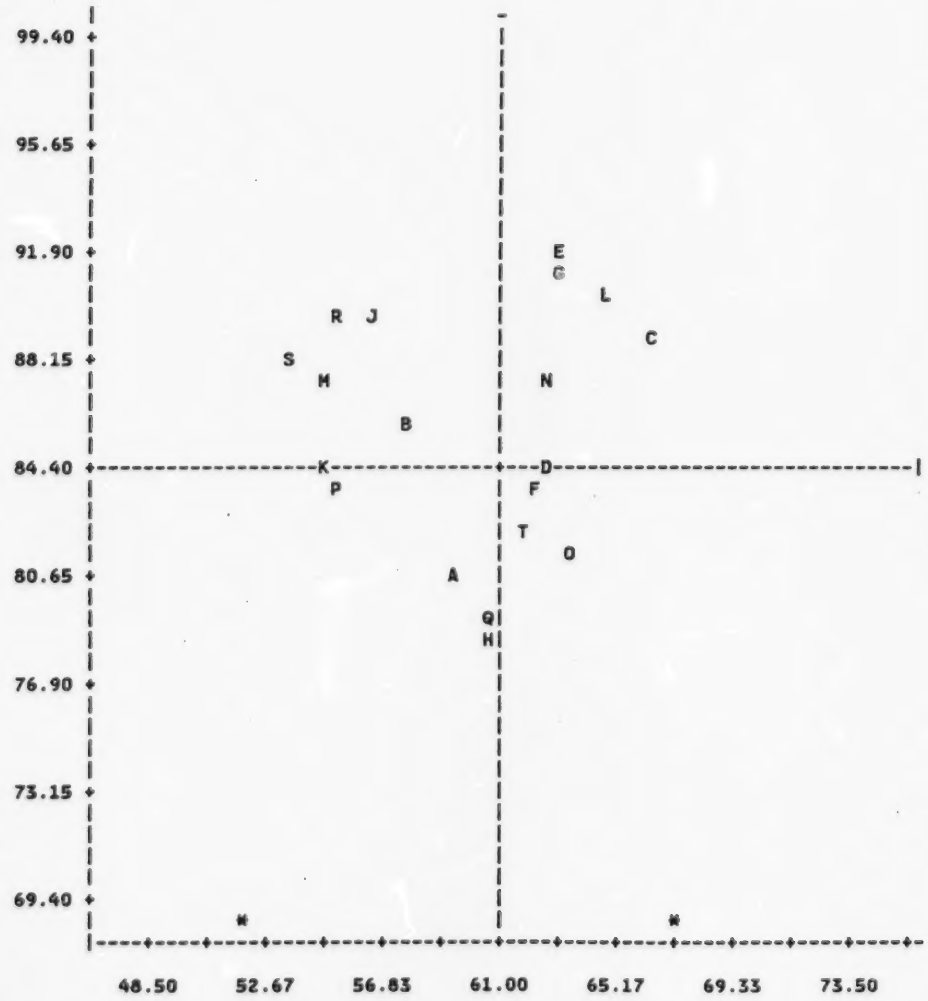
TEST 12: PERCENT CRUSHED PARTICLES

SCATTER PLOT ANALYSIS

SCALE: 1.667 UNITS=1 CM

HORIZONTAL AXIS: MATERIAL 1

VERTICAL AXIS: MATERIAL 2



LEGEND

LAB. NO. 1	A
LAB. NO. 2	B
LAB. NO. 4	C
LAB. NO. 5	D
LAB. NO. 6	E
LAB. NO. 12	F
LAB. NO. 13	G
LAB. NO. 14	H
LAB. NO. 23	I
LAB. NO. 27	J
LAB. NO. 38	K
LAB. NO. 50	L
LAB. NO. 53	M
LAB. NO. 56	N
LAB. NO. 58	O
LAB. NO. 60	P
LAB. NO. 62	Q
LAB. NO. 64	R
LAB. NO. 66	S
LAB. NO. 67	T
LAB. NO. 69	U

	MATERIAL 1	MATERIAL 2
MEAN	60.271	81.443
MEDIAN	61.000	84.400

NO OF POINTS IN EACH QUADRANT

NE = 6

SE = 3

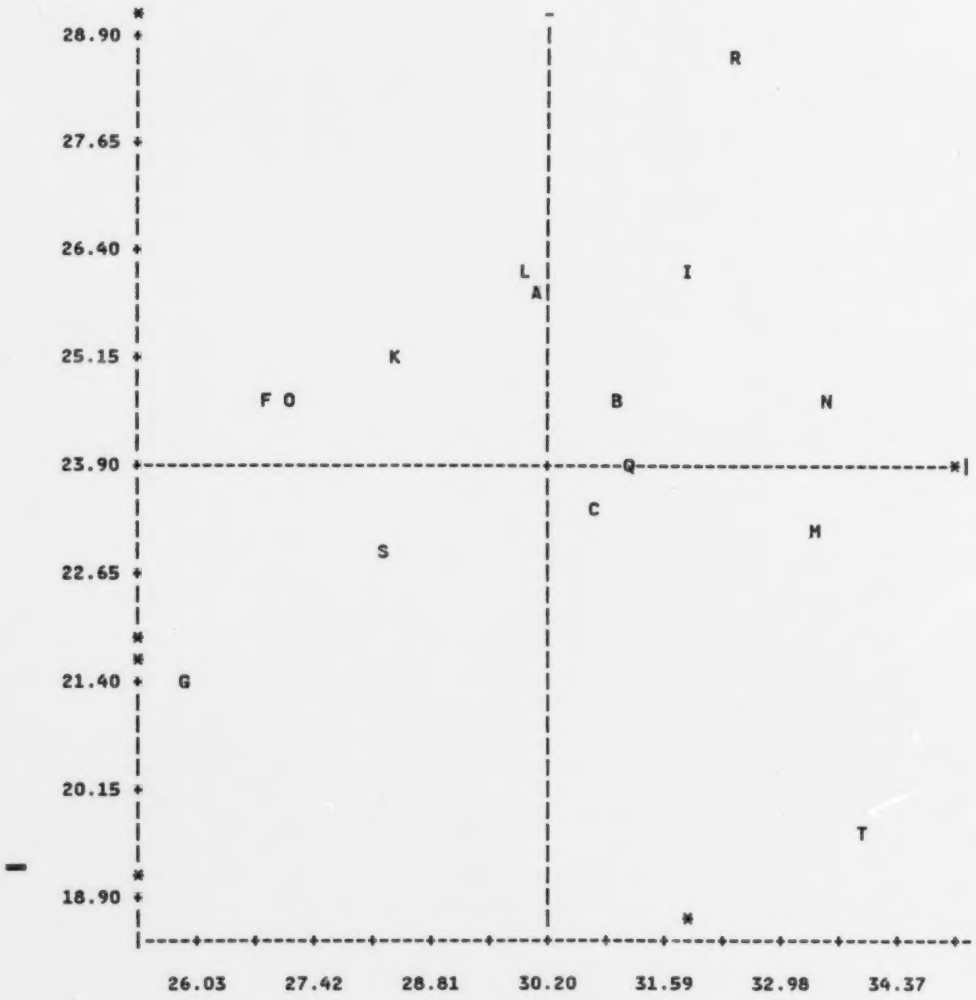
TEST 20: PERCENT RETAINED ON 2.36 MM SIEVE (FINE AGGREGATE)

SCATTER PLOT ANALYSIS

SCALE: 0.556 UNITS=1 CM

HORIZONTAL AXIS: MATERIAL 1

VERTICAL AXIS: MATERIAL 2



LEGEND

LAB. NO. 1	= A
LAB. NO. 2	= B
LAB. NO. 4	= C
LAB. NO. 5	= D
LAB. NO. 6	= E
LAB. NO. 12	= F
LAB. NO. 13	= G
LAB. NO. 14	= H
LAB. NO. 23	= I
LAB. NO. 27	= J
LAB. NO. 38	= K
LAB. NO. 50	= L
LAB. NO. 53	= M
LAB. NO. 56	= N
LAB. NO. 58	= O
LAB. NO. 60	= P
LAB. NO. 62	= Q
LAB. NO. 64	= R
LAB. NO. 66	= S
LAB. NO. 67	= T
LAB. NO. 69	= U

	MATERIAL 1	MATERIAL 2
MEAN	29.314	23.981
MEDIAN	30.200	23.900

NO OF POINTS IN EACH QUADRANT

NE = 5

SE = 3

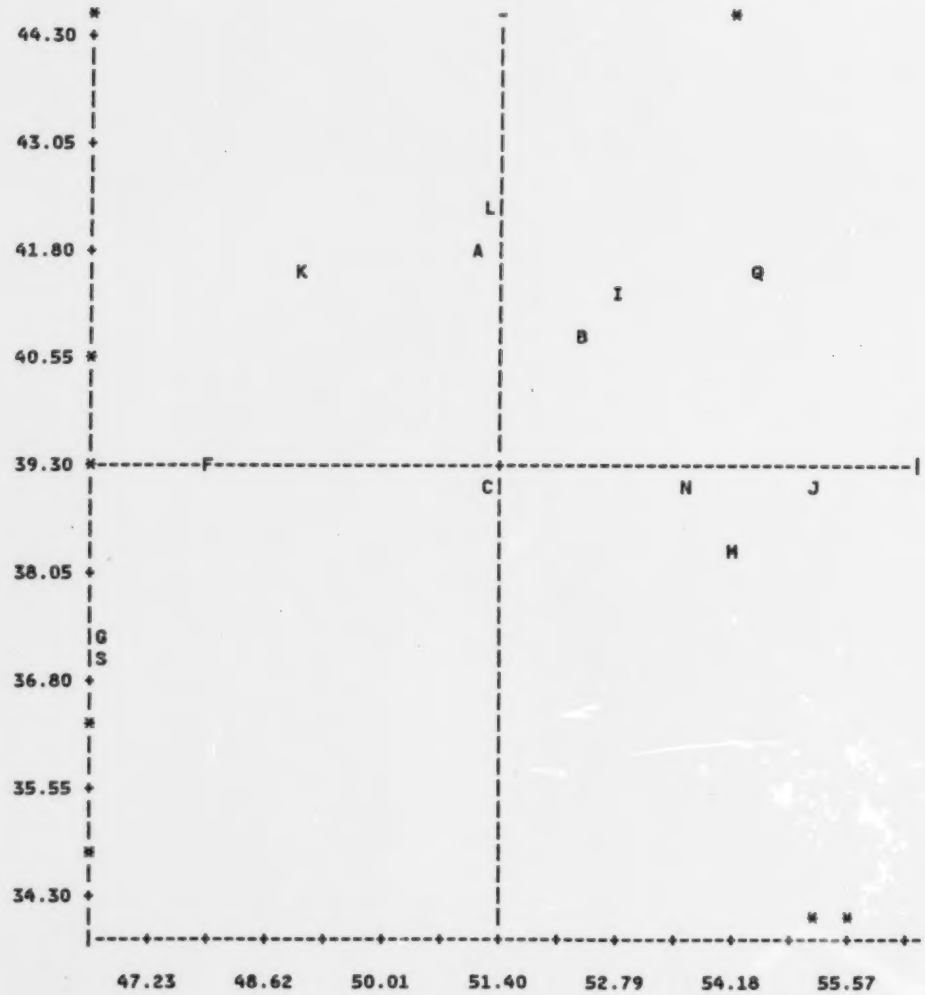
TEST 21: PERCENT RETAINED ON 1.18 MM SIEVE (FINE AGGREGATE)

SCATTER PLOT ANALYSIS

HORIZONTAL AXIS: MATERIAL 1

SCALE: 0.556 UNITS=1 CM

VERTICAL AXIS: MATERIAL 2



LEGEND

LAB. NO. 1 = A
LAB. NO. 2 = B
LAB. NO. 4 = C
LAB. NO. 5 = D
LAB. NO. 6 = E
LAB. NO. 12 = F
LAB. NO. 13 = G
LAB. NO. 14 = H
LAB. NO. 23 = I
LAB. NO. 27 = J
LAB. NO. 38 = K
LAB. NO. 50 = L
LAB. NO. 53 = M
LAB. NO. 56 = N
LAB. NO. 58 = O
LAB. NO. 60 = P
LAB. NO. 62 = Q
LAB. NO. 64 = R
LAB. NO. 66 = S
LAB. NO. 67 = T
LAB. NO. 69 = U

	MATERIAL 1	MATERIAL 2
MEAN	50.257	39.676
MEDIAN	51.400	39.300

NO OF POINTS IN EACH QUADRANT

NE = 3
SE = 3

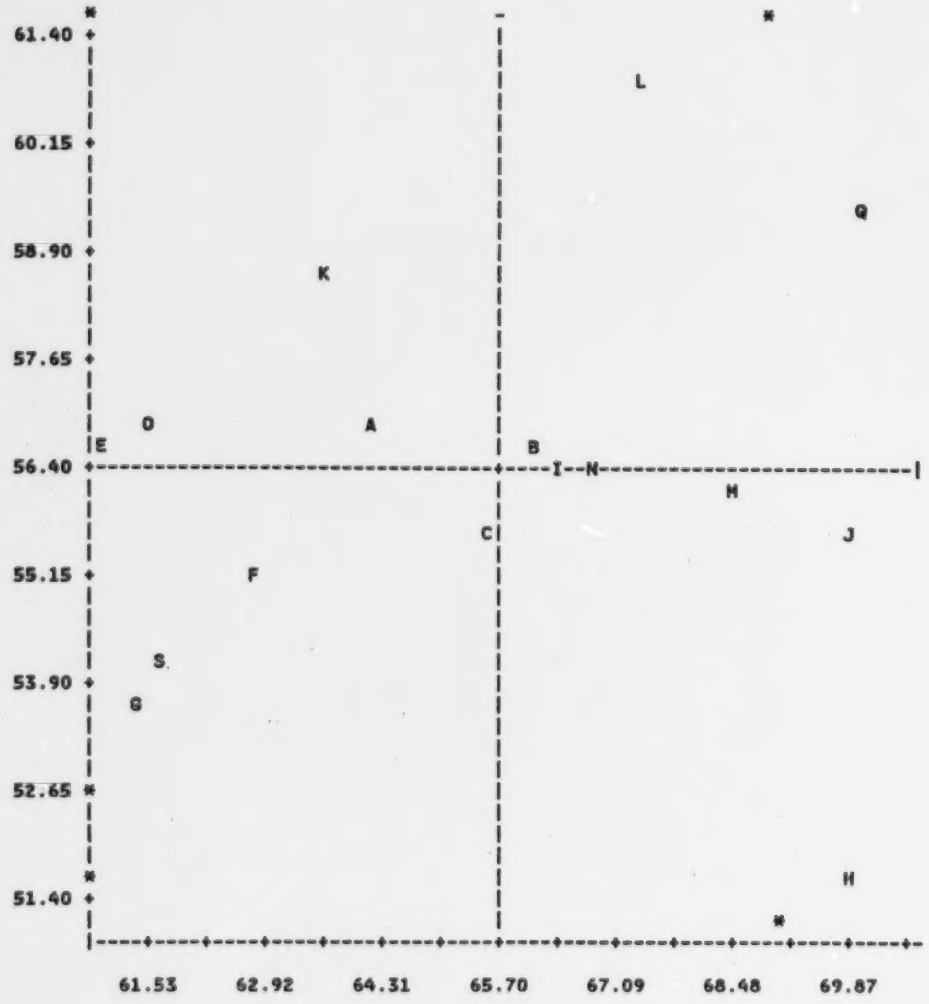
TEST 22: PERCENT RETAINED ON 600 ~~UM~~ SIEVE (FINE AGGREGATE)

SCATTER PLOT ANALYSIS

SCALE: 0.556 UNITS=1 CM

HORIZONTAL AXIS: MATERIAL 1

VERTICAL AXIS: MATERIAL 2



LEGEND

LAB. NO. 1 = A
LAB. NO. 2 = B
LAB. NO. 4 = C
LAB. NO. 5 = D
LAB. NO. 6 = E
LAB. NO. 12 = F
LAB. NO. 13 = G
LAB. NO. 14 = H
LAB. NO. 23 = I
LAB. NO. 27 = J
LAB. NO. 38 = K
LAB. NO. 50 = L
LAB. NO. 53 = M
LAB. NO. 56 = N
LAB. NO. 58 = O
LAB. NO. 60 = P
LAB. NO. 62 = Q
LAB. NO. 64 = R
LAB. NO. 66 = S
LAB. NO. 67 = T
LAB. NO. 69 = U

	MATERIAL 1	MATERIAL 2
MEAN	64.919	56.400
MEDIAN	65.700	56.400

NO OF POINTS IN EACH QUADRANT

NE = 5
SE = 3

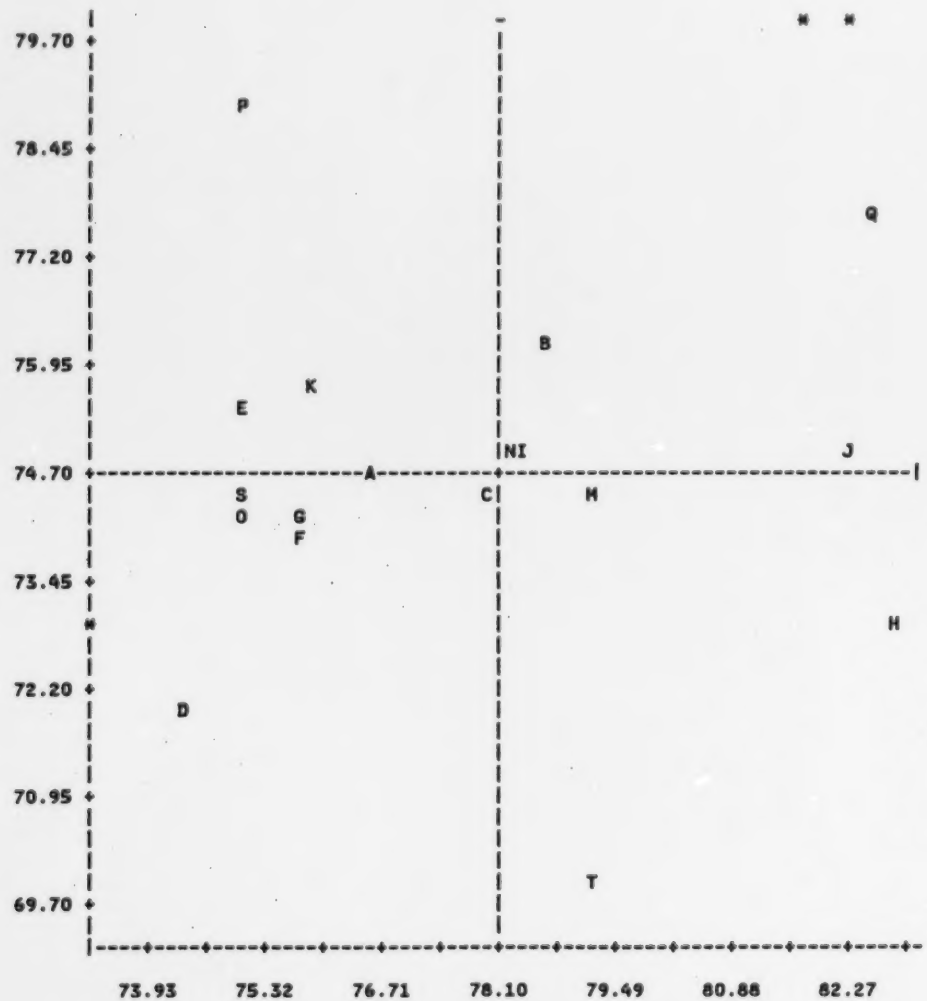
TEST 23: PERCENT RETAINED ON 300 UM SIEVE (FINE AGGREGATE)

SCATTER PLOT ANALYSIS

SCALE: 0.556 UNITS=1 CM

HORIZONTAL AXIS: MATERIAL 1

VERTICAL AXIS: MATERIAL 2



LEGEND

LAB. NO. 1	= A
LAB. NO. 2	= B
LAB. NO. 4	= C
LAB. NO. 5	= D
LAB. NO. 6	= E
LAB. NO. 12	= F
LAB. NO. 13	= G
LAB. NO. 14	= H
LAB. NO. 23	= I
LAB. NO. 27	= J
LAB. NO. 38	= K
LAB. NO. 50	= L
LAB. NO. 53	= M
LAB. NO. 56	= N
LAB. NO. 58	= O
LAB. NO. 60	= P
LAB. NO. 62	= Q
LAB. NO. 64	= R
LAB. NO. 66	= S
LAB. NO. 67	= T
LAB. NO. 69	= U

	MATERIAL 1	MATERIAL 2
MEAN	77.862	75.381
MEDIAN	78.100	74.700

NO OF POINTS IN EACH QUADRANT

NE = 5
SE = 3

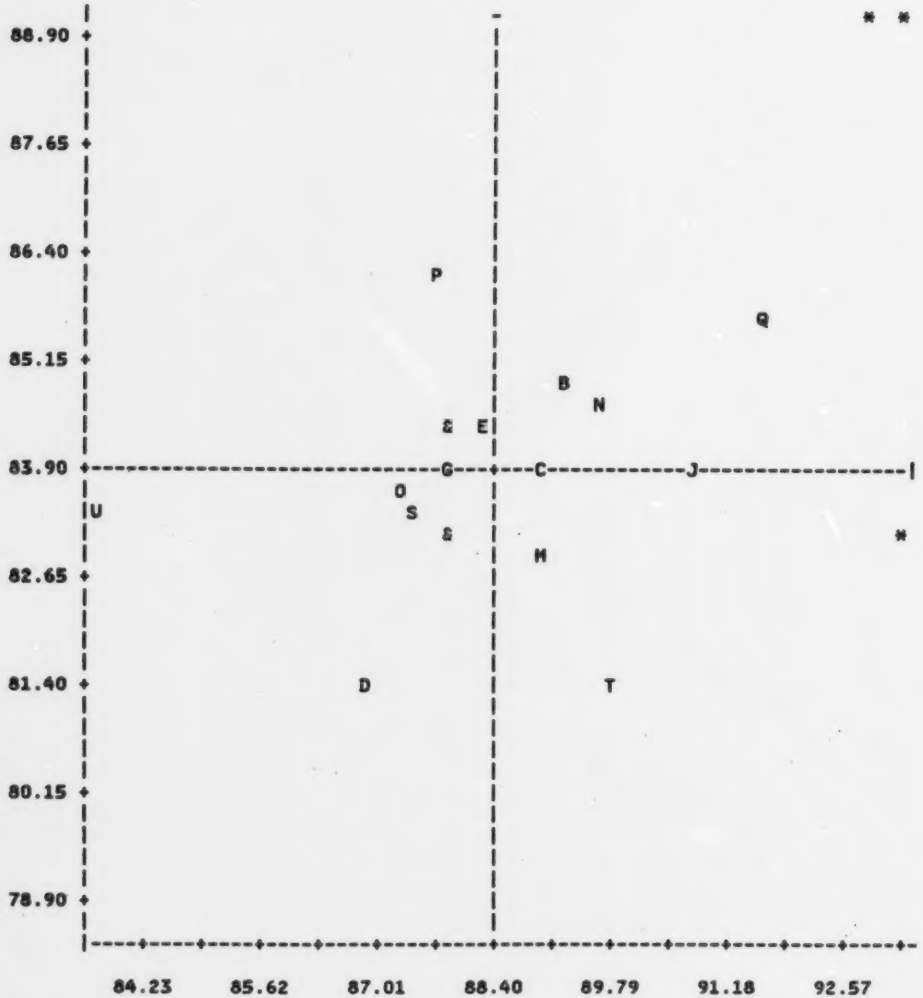
TEST 24: PERCENT RETAINED ON 150 UM SIEVE (FINE AGGREGATE)

SCATTER PLOT ANALYSIS

SCALE: 0.556 UNITS=1 CM

HORIZONTAL AXIS: MATERIAL 1

VERTICAL AXIS: MATERIAL 2



LEGEND

LAB. NO. 1	= A
LAB. NO. 2	= B
LAB. NO. 4	= C
LAB. NO. 5	= D
LAB. NO. 6	= E
LAB. NO. 12	= F
LAB. NO. 13	= G
LAB. NO. 14	= H
LAB. NO. 23	= I
LAB. NO. 27	= J
LAB. NO. 38	= K
LAB. NO. 50	= L
LAB. NO. 53	= M
LAB. NO. 56	= N
LAB. NO. 58	= O
LAB. NO. 60	= P
LAB. NO. 62	= Q
LAB. NO. 64	= R
LAB. NO. 66	= S
LAB. NO. 67	= T
LAB. NO. 69	= U

	MATERIAL 1	MATERIAL 2
MEAN	89.209	84.657
MEDIAN	88.400	83.900

NO OF POINTS IN EACH QUADRANT

NE = 5

SE = 2

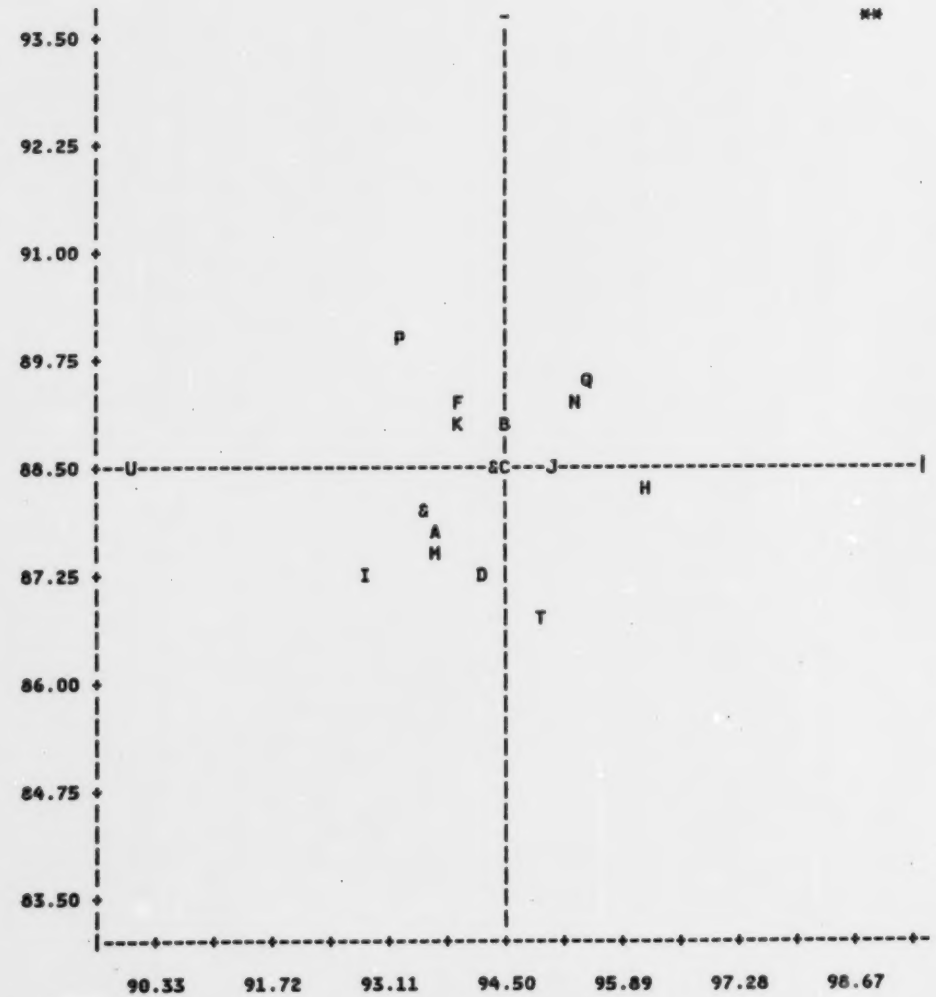
TEST 25: PERCENT RETAINED ON 75 UM SIEVE (FINE AGGREGATE)

SCATTER PLOT ANALYSIS

SCALE: 0.556 UNITS=1 CM

HORIZONTAL AXIS: MATERIAL 1

VERTICAL AXIS: MATERIAL 2



LEGEND

LAB. NO. 1 = A
LAB. NO. 2 = B
LAB. NO. 4 = C
LAB. NO. 5 = D
LAB. NO. 6 = E
LAB. NO. 12 = F
LAB. NO. 13 = G
LAB. NO. 14 = H
LAB. NO. 23 = I
LAB. NO. 27 = J
LAB. NO. 38 = K
LAB. NO. 50 = L
LAB. NO. 53 = M
LAB. NO. 56 = N
LAB. NO. 58 = O
LAB. NO. 60 = P
LAB. NO. 62 = Q
LAB. NO. 64 = R
LAB. NO. 66 = S
LAB. NO. 67 = T
LAB. NO. 69 = U

	MATERIAL 1	MATERIAL 2
MEAN	94.686	89.348
MEDIAN	94.500	88.500

NO OF POINTS IN EACH QUADRANT

NE = 3
SE = 2

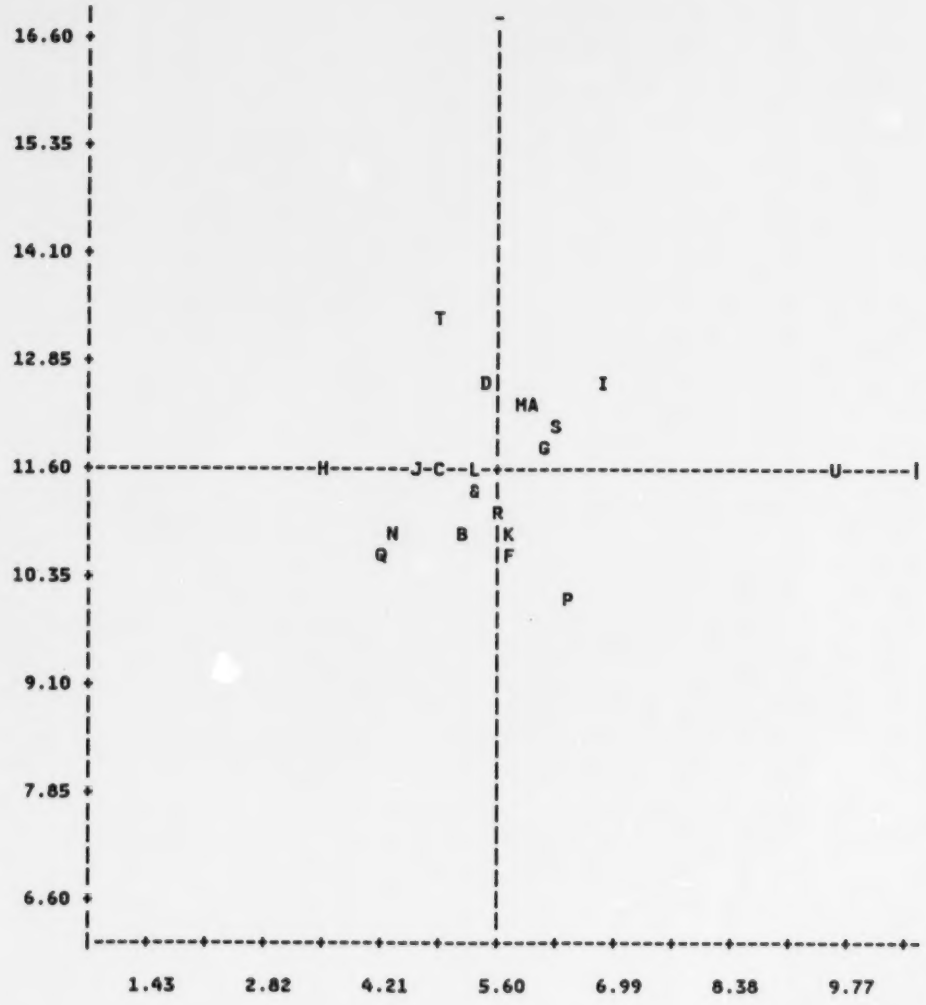
TEST 26: PERCENT PASSED ON 75 UM SIEVE (FINE AGGREGATE)

SCATTER PLOT ANALYSIS

SCALE: 0.556 UNITS=1 CM

HORIZONTAL AXIS: MATERIAL 1

VERTICAL AXIS: MATERIAL 2



LEGEND

LAB. NO. 1	= A
LAB. NO. 2	= B
LAB. NO. 4	= C
LAB. NO. 5	= D
LAB. NO. 6	= E
LAB. NO. 12	= F
LAB. NO. 13	= G
LAB. NO. 14	= H
LAB. NO. 23	= I
LAB. NO. 27	= J
LAB. NO. 38	= K
LAB. NO. 50	= L
LAB. NO. 53	= M
LAB. NO. 56	= N
LAB. NO. 58	= O
LAB. NO. 60	= P
LAB. NO. 62	= Q
LAB. NO. 64	= R
LAB. NO. 66	= S
LAB. NO. 67	= T
LAB. NO. 69	= U

	MATERIAL 1	MATERIAL 2
MEAN	5.743	11.581
MEDIAN	5.600	11.600

NO OF POINTS IN EACH QUADRANT

NE = 6
SE = 3

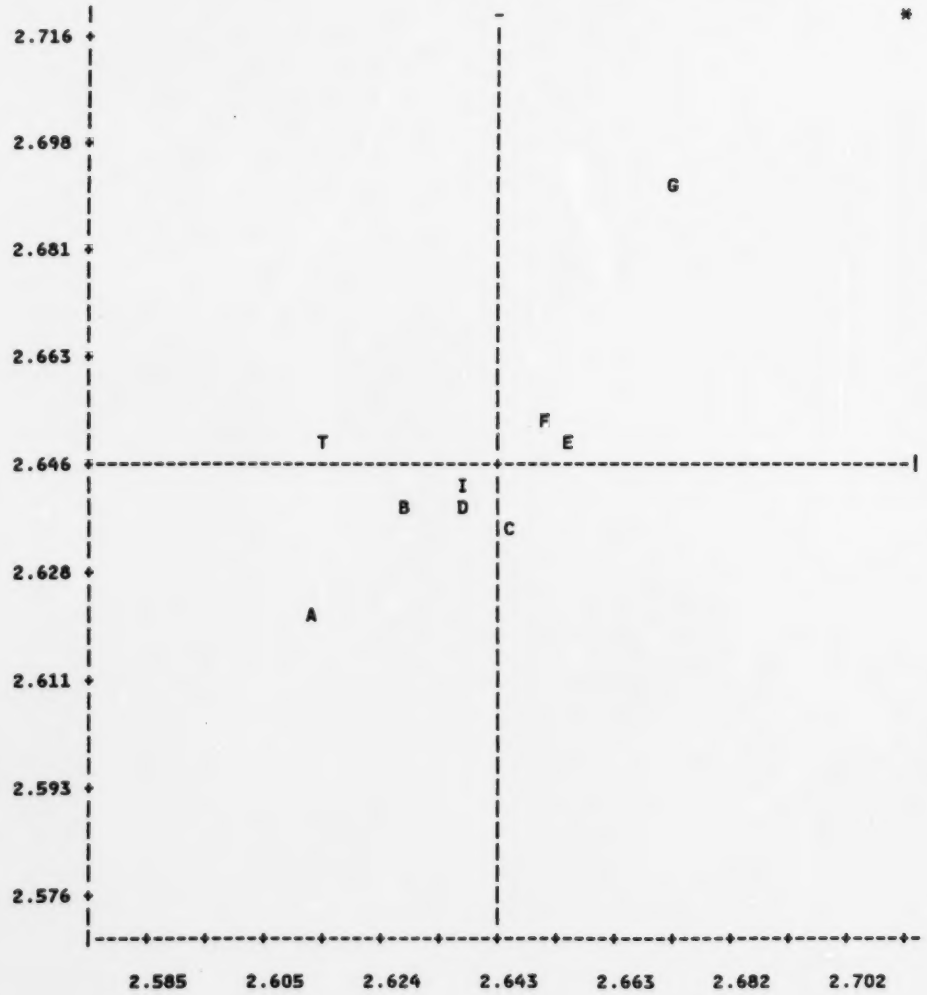
TEST 27: RELATIVE DENSITY (FINE AGGREGATE - BULK S.S. D.)

SCATTER PLOT ANALYSIS

SCALE: 0.008 UNITS=1 CM

HORIZONTAL AXIS: MATERIAL 1

VERTICAL AXIS: MATERIAL 2



LEGEND

LAB. NO. 1 = A
LAB. NO. 2 = B
LAB. NO. 4 = C
LAB. NO. 5 = D
LAB. NO. 6 = E
LAB. NO. 12 = F
LAB. NO. 13 = G
LAB. NO. 23 = I
LAB. NO. 66 = S
LAB. NO. 67 = T

	MATERIAL 1	MATERIAL 2
MEAN	2.650	2.653
MEDIAN	2.644	2.646

NO OF POINTS IN EACH QUADRANT

NE = 3
SE = 1

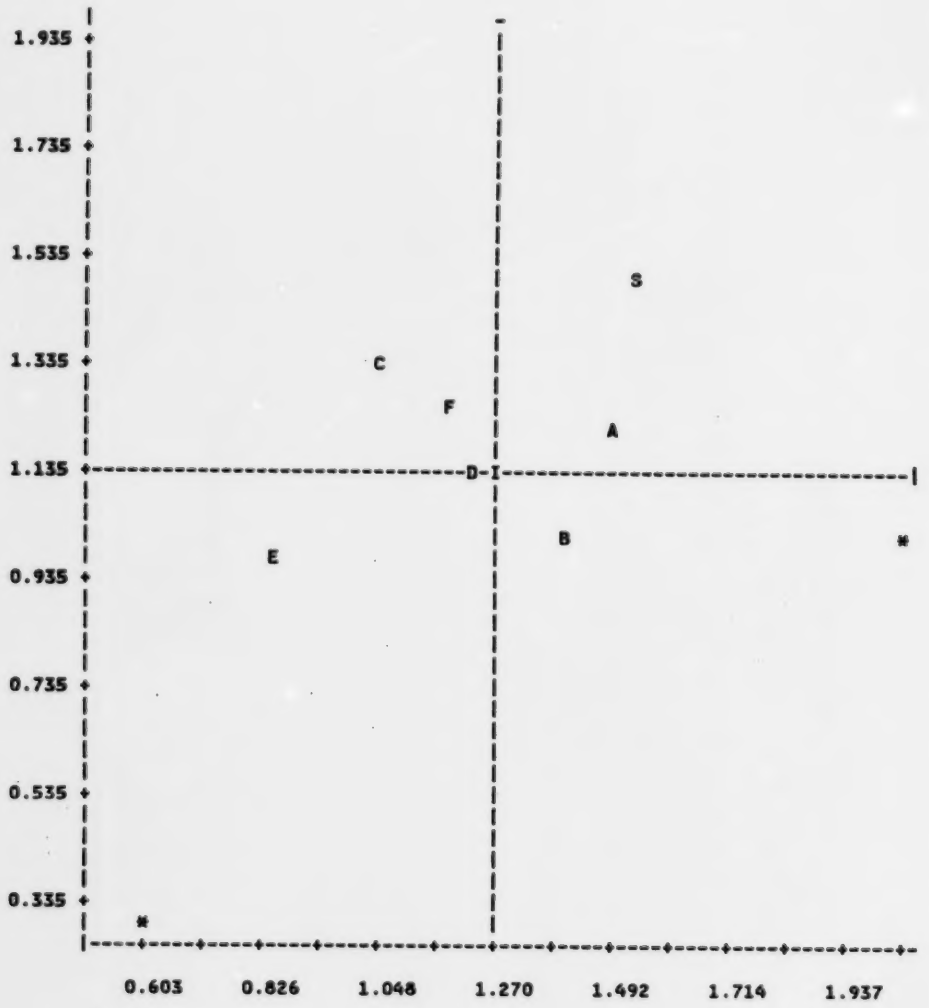
TEST 28: ABSORPTION (FINE AGGREGATE)

SCATTER PLOT ANALYSIS

SCALE: 0.089 UNITS=1 CM

HORIZONTAL AXIS: MATERIAL 1

VERTICAL AXIS: MATERIAL 2



LEGEND

LAB. NO.	1 = A
LAB. NO.	2 = B
LAB. NO.	4 = C
LAB. NO.	5 = D
LAB. NO.	6 = E
LAB. NO.	12 = F
LAB. NO.	13 = G
LAB. NO.	23 = I
LAB. NO.	66 = S
LAB. NO.	67 = T

	MATERIAL 1	MATERIAL 2
MEAN	1.303	1.091
MEDIAN	1.270	1.135

NO OF POINTS IN EACH QUADRANT

NE = 2
SE = 1

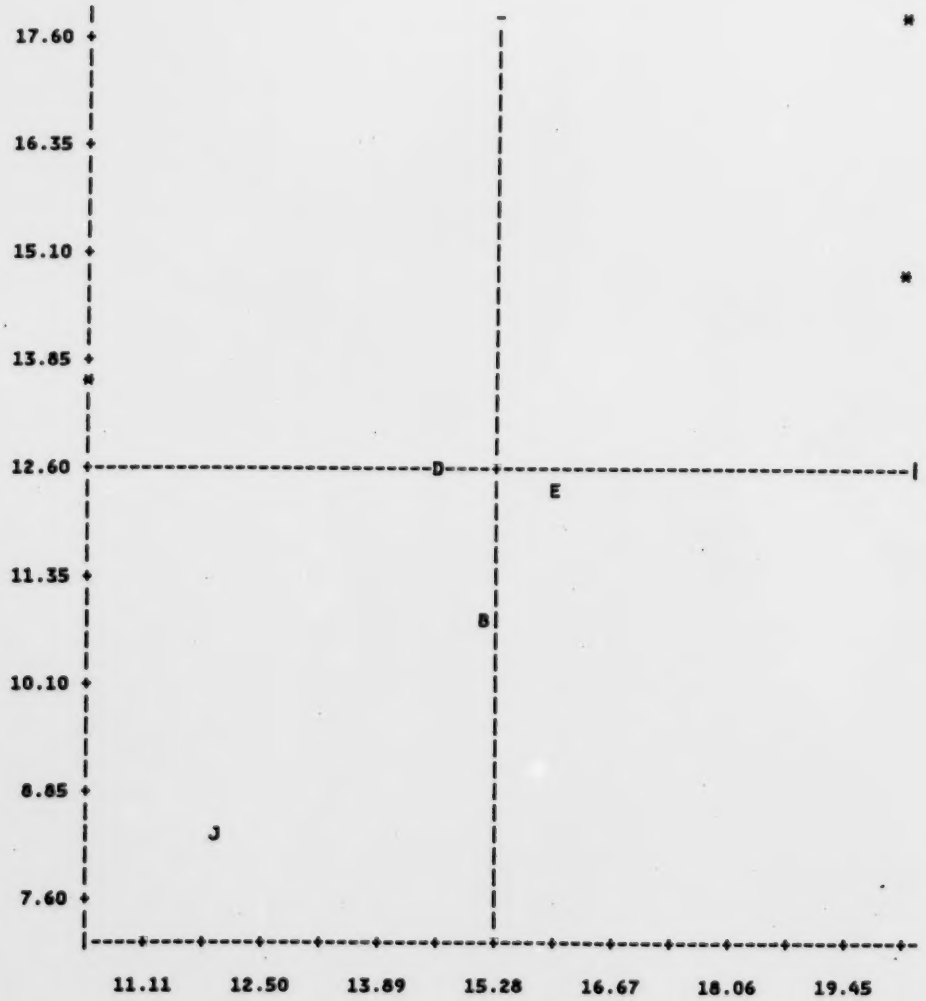
TEST 29: MAGNESIUM SULFATE SOUNDNESS LOSS, % (FINE AGGREGATE)

SCATTER PLOT ANALYSIS

SCALE: 0.556 UNITS=1 CM

HORIZONTAL AXIS: MATERIAL 1

VERTICAL AXIS: MATERIAL 2



LEGEND

LAB. NO. 2 = B
LAB. NO. 4 = C
LAB. NO. 5 = D
LAB. NO. 6 = E
LAB. NO. 27 = J
LAB. NO. 66 = S
LAB. NO. 67 = T

	MATERIAL 1	MATERIAL 2
MEAN	16.899	13.039
MEDIAN	15.280	12.600

NO OF POINTS IN EACH QUADRANT

NE = 0
SE = 1

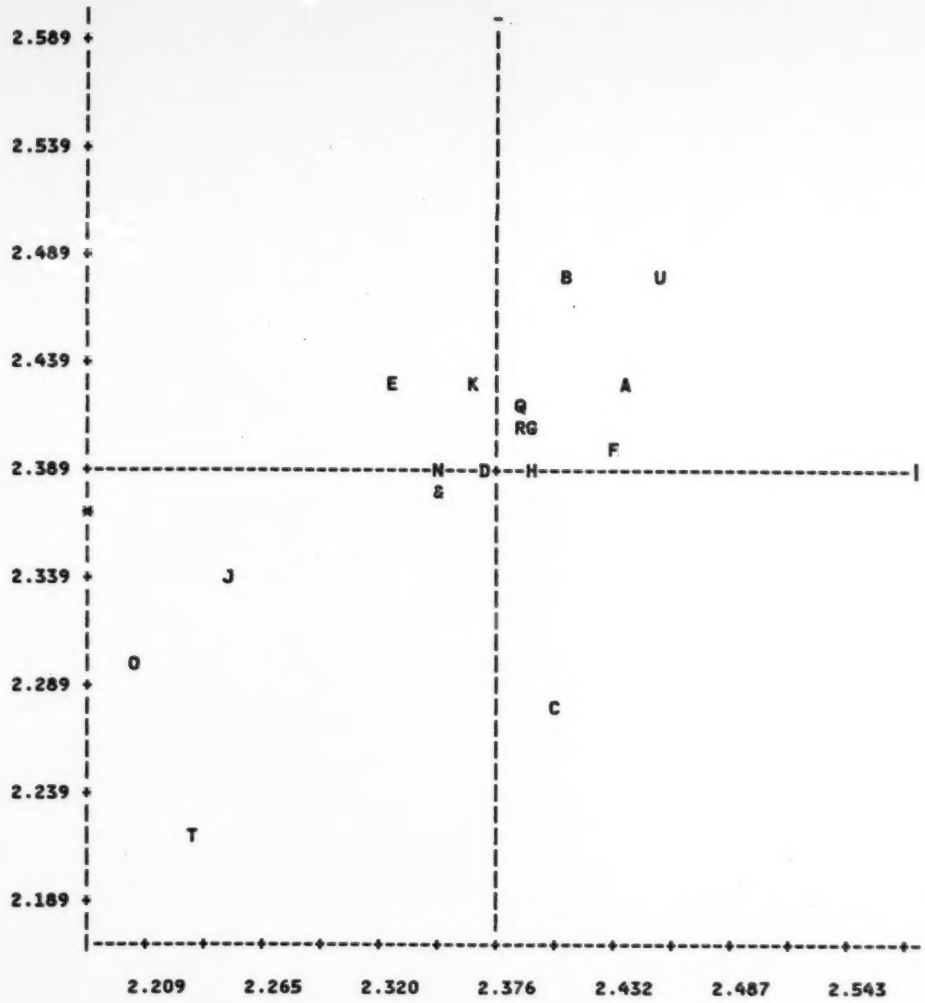
TEST 50: MAXIMUM WET DENSITY G/CM3 (MOISTURE - DENSITY RELATIONSHIP)

SCATTER PLOT ANALYSIS

SCALE: 0.022 UNITS=1 CM

HORIZONTAL AXIS: MATERIAL 1

VERTICAL AXIS: MATERIAL 2



LEGEND

LAB. NO. 1	= A
LAB. NO. 2	= B
LAB. NO. 4	= C
LAB. NO. 5	= D
LAB. NO. 6	= E
LAB. NO. 12	= F
LAB. NO. 13	= G
LAB. NO. 14	= H
LAB. NO. 27	= J
LAB. NO. 38	= K
LAB. NO. 53	= M
LAB. NO. 56	= N
LAB. NO. 58	= O
LAB. NO. 60	= P
LAB. NO. 62	= Q
LAB. NO. 64	= R
LAB. NO. 66	= S
LAB. NO. 67	= T
LAB. NO. 69	= U

	MATERIAL 1	MATERIAL 2
MEAN	2.355	2.386
MEDIAN	2.376	2.389

NO OF POINTS IN EACH QUADRANT

NE = 8
SE = 1

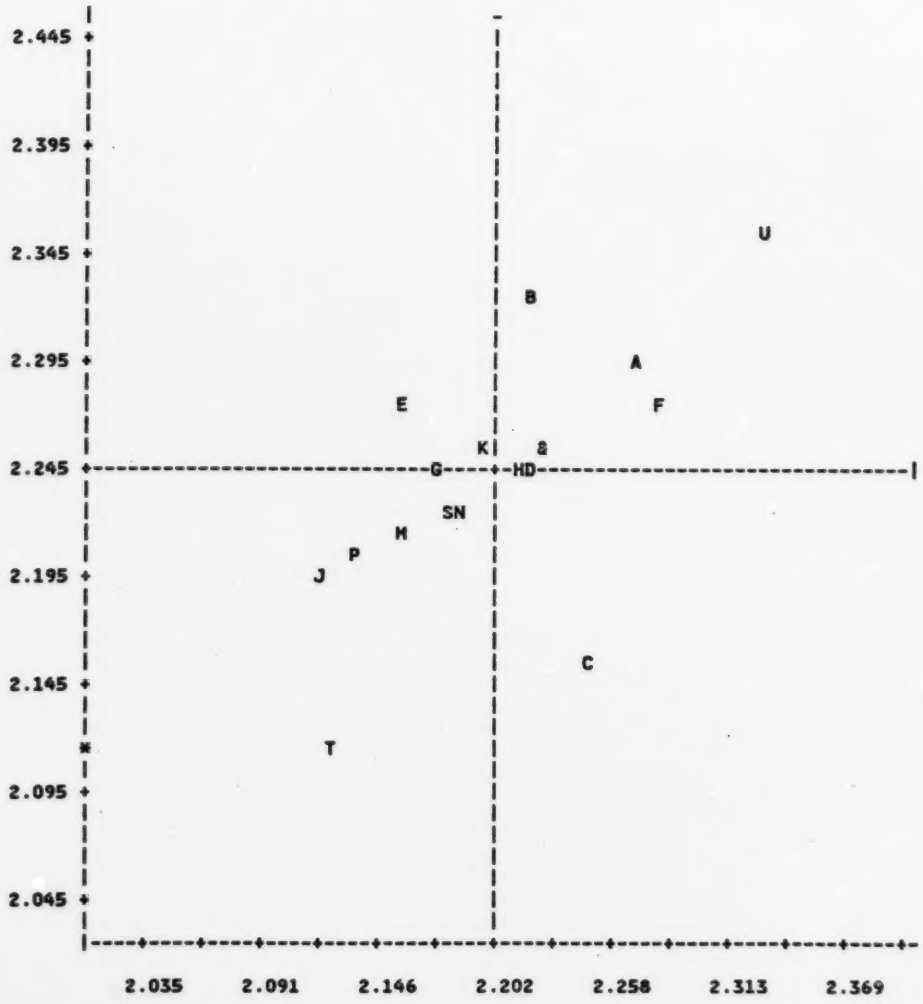
TEST 51: MAXIMUM DRY DENSITY G/CM3 (MOISTURE - DENSITY RELATIONSHIP)

SCATTER PLOT ANALYSIS

SCALE: 0.022 UNITS=1 CM

HORIZONTAL AXIS: MATERIAL 1

VERTICAL AXIS: MATERIAL 2



LEGEND

LAB. NO. 1	= A
LAB. NO. 2	= B
LAB. NO. 4	= C
LAB. NO. 5	= D
LAB. NO. 6	= E
LAB. NO. 12	= F
LAB. NO. 13	= G
LAB. NO. 14	= H
LAB. NO. 27	= J
LAB. NO. 38	= K
LAB. NO. 53	= M
LAB. NO. 56	= N
LAB. NO. 58	= O
LAB. NO. 60	= P
LAB. NO. 62	= Q
LAB. NO. 64	= R
LAB. NO. 66	= S
LAB. NO. 67	= T
LAB. NO. 69	= U

	MATERIAL 1	MATERIAL 2
MEAN	2.198	2.236
MEDIAN	2.202	2.245

NO OF POINTS IN EACH QUADRANT

NE = 8
SE = 1

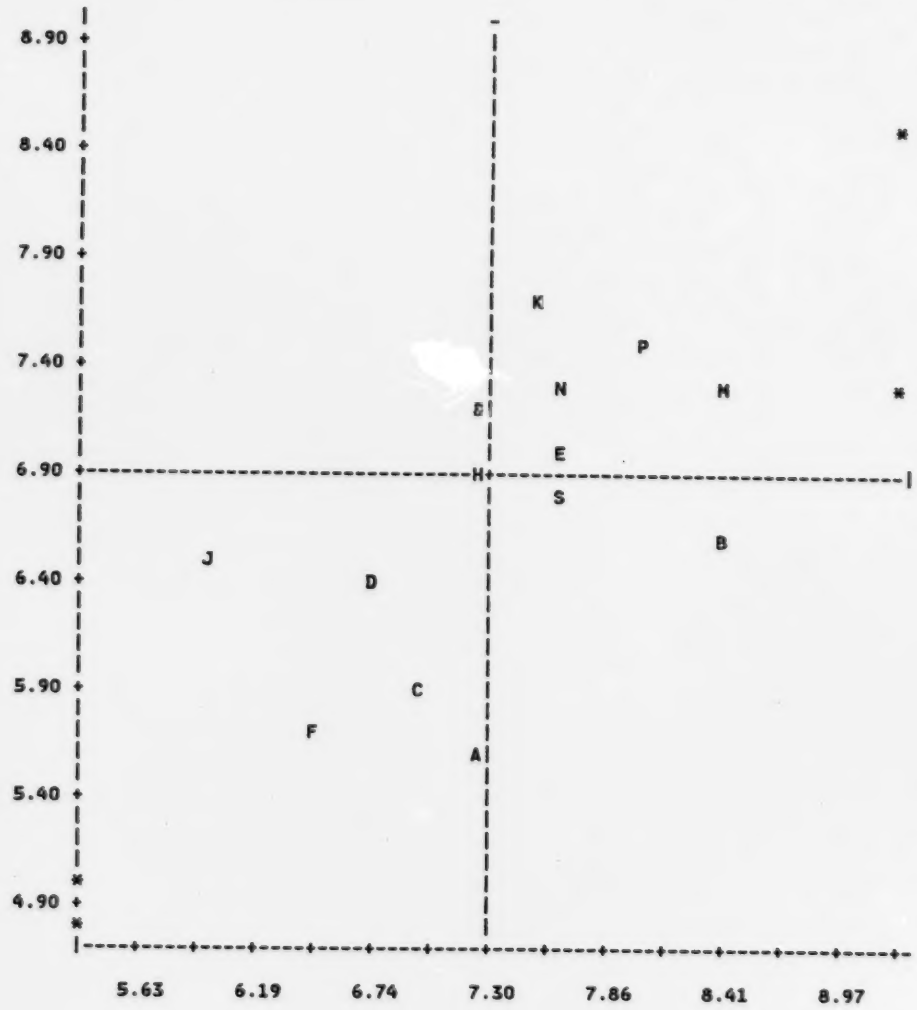
TEST 52: OPTIMUM MOISTURE, % (MOISTURE - DENSITY RELATIONSHIP)

SCATTER PLOT ANALYSIS

SCALE: 0.222 UNITS=1 CM

HORIZONTAL AXIS: MATERIAL 1

VERTICAL AXIS: MATERIAL 2



LEGEND

LAB. NO. 1	= A
LAB. NO. 2	= B
LAB. NO. 4	= C
LAB. NO. 5	= D
LAB. NO. 6	= E
LAB. NO. 12	= F
LAB. NO. 13	= G
LAB. NO. 14	= H
LAB. NO. 27	= J
LAB. NO. 38	= K
LAB. NO. 53	= M
LAB. NO. 56	= N
LAB. NO. 58	= O
LAB. NO. 60	= P
LAB. NO. 62	= Q
LAB. NO. 64	= R
LAB. NO. 66	= S
LAB. NO. 67	= T
LAB. NO. 69	= U

	MATERIAL 1	MATERIAL 2
MEAN	7.437	6.711
MEDIAN	7.300	6.900

NO OF POINTS IN EACH QUADRANT

NE = 5
SE = 2